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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,847	12/14/2001	Grzegorz J. Kusinski	020030-000400US	9602

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EXAMINER

LEROY, DAVID H

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 05/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/017,847

Applicant(s)

KUSINSKI ET AL.

Examiner

David H. LeRoy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2,4-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

The amendment of March 13, 2003 is acknowledged. Claim 3 was cancelled. Claim 1 was amended.

In view of the Applicant et al.'s comments concerning Claim 12, the 35 U.S.C. 112 2nd paragraph rejection of Claim 12 is withdrawn.

The indicated allowability of Claim 3 is withdrawn based on prior art of record. Rejection of amended Claims 1-2 and 4-12 follows:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 2, and 4-12 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Law et al. in view of Koo et al. PCT WO 00/37689.

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2. Law et al. disclose low alloy steel having the thin films of retained interlath austenite in untransformed martensite and transformation of austenite to ferrite (See abstract top of page 642 and Introduction in col. 1 page 642). Law et al. disclose the alloy compositions containing iron and carbon in a range of 0.25-0.40 % (See Table 1 in col. 2 page 642 and Figure 1). Law et al. discuss interphase precipitation of carbides during transformation of the austenite, in lath austenite-untransformed martensite, and in ferrite (See col.2 page 642 – col. 1 page 643). When discussing transformation, Law et al. disclose interlath films of retained austenite in retained martensitic areas and abutting the ferrite (See "Ferrite reaction" col.1-col. 2 page 643). Law et al. identifies no carbide precipitates at interfaces between the martensitic-austenitic phases. This is interpreted as martensitic-austenitic interfaces being devoid of carbides as in the claimed invention.

Law et al. do not teach a triple phase microstructure comprising ferrite crystals fused with martensite-austenite crystals comprising laths of martensite alternating with thin films of austenite, in which the martensite-austenite crystals constitute from about 5% to about 95% by weight of the triple phase structure.

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3. Koo et al. WO 00/37689 teach a low carbon steel comprising up to about 40 vol.% of a first phase of ferrite, about 50 vol.% to about 90 vol.% of a second phase of predominantly fine-grained lath martensite, and up to about 10 vol.% of a third phase of retained austenite (See Claim 19 of Koo et al.). Koo et al. also teach inclusion of up to about 0.5% by weight Si (See Claim 22).

4. With respect to the per cent of martensite-austenite crystals by weight in the triple phase structure phase structure in Claim 1, Koo et al.'s per cent lath martensite of about 50 vol.% to about 90 vol.% overlaps the per cent of martensite-austenite of from about 5% to about 95% by weight of the triple phase structure of the claimed invention. Because the large percentages of lath martensite in the triple phase microstructure is known in the art as evidenced by Koo et al.'s teaching, it would have been obvious to one of ordinary skill in the art to include the large percentage of lath martensite as taught by Koo et al. in Law et al.'s alloy due to the expected advantages of enhancing toughness and crack propagation resistance (see Koo et al. p. 6 lines 15-25) as taught by Koo et al.

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5. With respect to the carbon content, Law et al.'s carbon content ranges of 0.25-0.40 wt. % (See Table 1 in col. 2 page 642) is close to the carbon content of the claimed invention of a maximum of 0.35% by weight (see Claim 1) or about 0.01% to about 0.35% by weight (see Claim 6) or about 0.03% to about 0.25% by weight (see Claim 7) or about 0.05% to about 0.2% by weight (see Claim 8) or about 0.03 to about 0.3% by weight (see Claim 11) or about 0.05% to about 0.02% by weight (see Claim 12). Therefore, since the claimed ranges "are close enough that one skilled in the art would have expected them to have the same properties", a prima facie case of obviousness exists (Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 Fed. Cir. 1985, See MPEP2144.05).

6. With respect to Claim 2 in which martensite-austenite crystals are devoid of carbide precipitates at interfaces between phases, When discussing transformation, Law et al. disclose interlath films of retained austenite in retained martensitic areas and abutting the ferrite (See "Ferrite reaction" col.1-col. 2 page 643). Law et al. identifies no carbide precipitates at interfaces between the martensitic-austenitic phases. This is interpreted as martensitic-austenitic interfaces being devoid of carbides as in the claimed invention.

7. With respect to the percentages in Claim 4, Koo et al.'s per cent lath martensite of about 50 vol.% to about 90 vol.% overlaps the per cent of martensite-austenite of from about 15% to about 60% by weight of the triple phase structure of the claimed inventions. See paragraph 4 above for the ground of rejection.

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8. With respect to the percentages in Claim 5, Koo et al.'s per cent lath martensite of about 50 vol.% to about 90 vol.% are close to the per cent of martensite-austenite of from about 20% to about 40% by weight of the triple phase structure of the claimed inventions. See paragraph 4 above for the ground of rejection.

9. With respect to the Carbon content in Claims 6 and 7, see paragraph 5 above for the ground of rejection.

10. With respect to the silicon content in Claims 9 and 11, Law et al. do not teach the silicon content of from about 0.1% to about 3%. Koo et al.'s silicon content of up to about 0.5% by weight Si (See Claim 22) overlaps the Si content of about 0.1% to about 3% by weight of the claimed invention. Because the function of Si is well known in the art as evidenced by Koo et al.'s teaching (see p. 23 lines 6-9), therefore, it would have been obvious to one of ordinary skill in the art to have added up to 0.5% Si to Law et al.'s alloy for the expected advantages of controlled deoxidation as taught by Koo et al.

11. With respect to the Si content in Claims 10 and 12, Law et al. do not teach the silicon content of from about 1% to about 2.5% by weight. Koo et al.'s silicon content of up to about 0.5% by weight Si (See Claim 22) is close to the Si content of from about 1% by weight of the claimed invention. Because the function of Si is well known in the art as evidenced by Koo et al.'s teaching (see p. 23 lines 6-9), therefore, it would have been obvious to one of ordinary skill in the art to have added about 1% Si to Law et al.'s alloy for the expected advantages of controlled deoxidation as taught by Koo et al.

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Conclusion

Applicant's arguments with respect to claims 1-2 and 4-12 have been considered but are moot in view of the new ground(s) of rejection.

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David H. LeRoy whose telephone number is 703-305-5793. The examiner can normally be reached on M-Th 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 872-9310 for regular communications and 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

DHL

5/27/03


ROY KING
SUPERVISORY PATENT EXAMINER
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